University News

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- New Technology and Educational Environment
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Editor :
SUTINDER SINGH

The Chemist in the Twentyfirst Century

Tribulations and Challenges

Samir K. Banerji*

A large chunk of good students, in the forties, took Chemistry, as the field of their future activity by choice, inspite of having the entire educational spectrum at their disposal. Apart from the favourable economics of studying Engineering, the brighter students, today largely do not come to chemisrry, even if they come to science. It has to be recognized that chemistry has not been able to compete for the best minds and therefore means. This is the problem, to which, we have to address ourselves, as this will automatically answer the question what chemistry of the future should be.

The answers to such questions, can come only if we do some heart-searching introspection. The chemists, by and large, have been a complacent community, often very much "brahmanical" in their approach and attitudes. This has been largely because of the wider employment potential of the chemist all along. It does not need emphasizing that there really is, no human activity, where chemistry and chemists do not have a part to play.

We will first identify the causes and problems, borrowing an Engineering term—a problem identified is a problem half solved, and in then try to suggest some concrete practical steps, remedial in nature, without large inputs being required

If we now examine the course material, it will be found that the axiom: "Mediocrity feels secure only when it takes refuge in tradition" aplty describes the actual situation prevailing to-day, in this area. More often than not, small tinkering with the course material goes by the name of updating of courses. The drab "meaningless" laboratory courses are possibly half a century old. The recommendations of the Conferences on Chemical Education and Research sponsored by the National Council for Science Education, University Grants Commission, US Agency for International Development and US National Science Foundation in 1969. for the change from the "repetitive" nature of experiments to project-oriented Lab appears to be "gathering dust" on the shelves of the powers that be. No evidence of its implementation—partial or modified, is available anywhere. This benumbs whatever little interest and initiative the students have, and only serves to waste large chunks of student contact-hours. The departments functioning more or less like water tight "Kingdoms" may perhaps be finding this as a "dubious" way to strengthen their faculty in terms of numbers.

If we look into the examination system, we can still find, that there is no dearth of people, who appear to be able to differentiate between 59 and 60. It's time we admitted that we have neither the competence nor the sophistication for such a fine division. Fixed course packages and to make matters worse, the process of a final and irrevocable judgement on the basis of one end-of-the term examination based on memory-oriented tests

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have only promoted development and ramification of the "technology of copying" and hardly anything else. Educational measurements have rarely been used, as a tool, for better teaching.

Research is a faculty activity to keep itself healthy. Let's now have a look at research, as practised, at these centres of higher learning. A close look into it, will show that, it is being pursued, with one aim and that is to produce a doctoral dissertation. It is, more often than not, "wholly" unconnected with life's problems and is usually, in a sense, "repetitive" work—an extrapolation of the "guru's" work or even "grand-guru's" work.

The situation has been very comprehensively discussed by one of the very competent chemists, in recent times, Dr. Sukh Dev, in his presidential address at the Annual Meeting of the Indian Chemical Society at Waltair in 1978. Discussing the problem of the quality of research he has pointed out that "whereas the growth of chemistry in India has been fairly well nurtured, and although one can recognize some landmarks, the contribution, on international standards is indeed very meagre and not at all commensurate with its long tradition of enquiry and research. And I am sure, all my friends here, would agree that there, just cannot be, local standards in science."

In a poor country, like ours, we can ill-afford this luxury. A Ph.D. thesis must largely aim at :

(i) helping, in some way, solving a real life problem, and thus contribute to the nation's welfare; and
(ii) a student should be able to get a meaningful employment on the basis of this work.

Any meaningful work to be of value will have to be interdisciplinary 'Team Work'. The concentration, has been, for too long, on individual efforts and as a Nation we have still to develop the culture of team spirit.

Let us have a look at the changing role of the chemist. From the role of a Mystic and Alchemist, converting baser metals to gold—Alchemists' theory of chemistry—to a definite discipline was a far cry, and it developed into one. The discipline organized itself to codified orthodoxies—Organic, Inorganic and Physical, and in spite of a world of change in the role of the chemist, he is still regarded as equivalent to an analyst, by most people. Apparently these things, coupled with the diminishing role of the chemists, does excercise the younger minds, and there is pessimism in many quarters concerning the future of chemists in the society.

A realistic look at chemistry would show that :

FRONT EDGE	Fundamental and Theoretical (Physical Chemistry)	Full of operators, physicists by training, thinly disguised as chemists.
FULL BACK	Organic Chemistry	Increasingly pulled by biology as biochemistry.
THIN WRAITH	Inorganic Chemistry	One does not clearly know what it means to-day.

There is however, no cause for pessimism if we change and extend our activities, particularly research, in chemistry, to research in chemical science or chemically oriented sciences and chemical engineering. The ever-widening and proliferating needs of man will provide enough challenges and opportunities to the chemically-oriented-scientist, if he gets out of the rigid orthodoxies. This will definitely provide new challenges and the pessimism generated by the diminishing role of the chemist is likely to disappear. The nation will feel happy in providing larger inputs for the development of this science. I feel one with the Italian Leader Gramschi that "we must fight the pessimism of the mind with the optimism of the will".

In conclusion, I would like to suggest some minimal concrete steps that should be immediately taken, so that better minds and means may be attracted to Chemical Science in the service of the country. The primary aim should be a 'Broader Base' with inter-disciplinary approach as no real-life problem is confined to a single discipline :

1. No student be permitted to complete a Master's Programme in chemistry, without adequate knowledge of mathematics. This marginal deficiency of the otherwise competent student from the Biology stream can be easily removed. This may initially start by taking help of the concerned department but must ultimately be done by chemists themselves. Today one cannot think of one pursuing chemistry without a mathematics background;

2. Atleast one course in computational techniques and one in Management Science should be in the compulsory package of the Master's Programme

so that wider horizons of employment may be opened up for chemists of the future;

3. Memory oriented courses in theory should be drastically reduced and drab and repetitive lab courses cut out and replaced by project-oriented courses; and
4. A semester or a slot in the final year should be kept for a small project and an introductory lab dissertation based on a real life problem, picked up from the environment around the seat of the University.

A possible 'Compulsory Package' of a 2-year programme may be of the following type :

Chemistry	**Other Disciplines**
1. Chemical Kinetics	Computational Techniques
2. Chemical Thermodynamics	Social Engineering (Management)
3. Chemistry of Non-Transitional Elements	Environmental Chemistry
4. Structure and Reactivity of Organic Compounds	
5. Coordination Chemistry	
6. Synthetic Organic Chemistry	
7. Quantum Chemistry	
8. Chemical Measurement Techniques	
9. Project	

It will seem that in a 3-lecture per week annual programme, the courses can be suitably grouped.

To provide for additional incentive, some challenging interdisciplinary courses like Computer Applications, Systems Science, Optimization Techniques Chemical Process Technology, Polymer Science Processing etc. could also be offered. ☐

INSA MEDAL FOR YOUNG SCIENTISTS-1987

Instituted by the Indian National Science Academy in 1974 these medals are awarded annually in recognition of outstanding work of scientists below the age of 32 (as reckoned on 31st December preceding the year of award). Only those **born on or after January 1, 1955** are eligible for consideration in 1987. The work done in India by the nominee will be taken into consideration for the award.

The awardee is presented a **medal** and a **cash award of Rs. 5,000/-**. In addition, the recipient is considered for a **research grant** by the Academy **not exceeding Rs. 20,000/- per year,** including a stipend for a JRF, for a period of three years for continuing research work, provided the research proposal is considered worthy of such support. Preferential consideration may be given under partial travel grant scheme for attending international conferences.

Nominations for the awards for **1987** may be made by Fellows of the Academy, established scientific societies of all India character, University faculties and departments, or research institutions.

The **last date** for the receipt of nominations in the Academy is **November 15, 1986.**

Nomination Proforma can be obtained from the **Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110002** by sending a self addressed envelope of 28 cm × 12 cm size.

New Technology in Higher Education And the Educational Environment

A.K. Indrayan*

Learning is defined as 'a change of behaviour as a result of experience.' Teaching could then be defined as providing those experiences. 'Good teaching' may then be defined as the one quickly providing those experiences which lead to desired behavioural changes. Too often, our old prejudices regarding the coverage of a subject matter and particular testing procedures have prevented us from exploiting the changes in behaviour that truly distinguish the educated student who is a reform in social and cultural values. This target can be achieved if we keep in mind that the individual differences between students do not, to any significant degree, relate to total mental capacity in terms of available neurons. Neither do learning rate differences relate to the velocity of impulses. Just as we can correctly modify the results which a student will exhibit on subsequent intelligence tests, by our efforts using recent technologies including video tapes, computers and lasers, we can also modify his behaviour in the areas of judgement, insight and imagination.

There are three components to an educational system : (i) content, (ii) students; and (iii) the teaching system (the process by which students are expected to gain control of the desired content). These components are in equilibrium when students have the skills and background necessary to learn effectively and efficiently from the teaching system. In view of the importance of teaching system, the question arises whether we are putting as much effort into planning for the well prepared ? Have we initiated very many research projects to identify the modes and ways of higher education ? The answer is a pretty 'no' (Yes, of course, recently some attention is being paid. But it is not enough). We should not worry about the high expenditure involved in bringing out the desired changes. In the words of Harry Johnson 'support of universities is like adherence to a religion or a church—the payoff from doing so is incalculable and problematical, but it is wise to buy insurance against unknown risks.' The monetary returns from higher education alone are probably sufficient to offset all the costs. Further, the non-monetary returns are several times as valuable as the monetary returns. The total returns from higher education in all its aspects exceed the cost by several times. So, we are not supposed to be afraid of the cost of all these modern and recent technologies and their applications to higher education.

Higher education not only produces a large increase in substantive knowledge, it also increases verbal skills, intellectual tolerance, aesthetic sensibility, mathematical skills, rationality and creativity. It helps students a great deal in finding their personal identity and in making life time choices congruent with this identity. It increases their psychological well-being as well as their understanding, human sympathy, and tolerance towards other ethnic and national groups and towards people who hold differing opinions. It has even an impact, though small, on taste, conduct and manner. It produces a moderate decrease in religious interest and observance. It appears to narrow the traditional differences between the two sexes. Higher education greatly enhances the practical competence of its students as citizens, workers, family members and consumers. In the domain of citizenship college/university, educated people are politically more liberal than others, better informed, and more likely to vote with proper reasoning. In the domain of family life, higher education affects the selection of marriage partners. It probably tends to delay the age of marriage and to reduce the birth rate. It clearly increases the thought given to time, energy and money consumed in the rearing of children. All this reflects the social benefits of higher education. However, this does not mean that higher education be largely encouraged and be open to all. A policy to allow higher education to masses would not yield good results. It will not only create unemployment and frustration, it will altogether lead to pollution in the environment of higher education. Higher education be allowed to only a limited number of persons who have shown real genius and calibre. In my opinion a person should be permitted to join for his post-graduate degree after two years work experience.

In the direction of improving the quality of higher

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education, the first and vital of my suggestion—involve research to find out the modes and ways of higher education. Research should be undertaken towards a direction to know how the new technologies can be applied to Indian surroundings suitable to our society and accommodative in our culture and keep pace with future. The import of know-how should be accompanied by a research project to apply it to Indian needs. In this context a clue can be taken from Japan which absorbs and adapts imported technology by advancing it through further research and development efforts and tries to put a research finding to commercial use as early as possible. The same can be applied for higher education. Further, by process of reinvestment and modernisation, the Japanese ensure that their plants and products are not rendered obsolete. Such policies are required to be applied in the field of education also.

University students will not be able to cope with their work after graduation if they just learn knowledge from books and lack the ability to create. Our teaching programmes, curriculum components, teaching methods and teaching materials have to be improved. Besides, there are too many required courses but too few optional courses (though we have improved a bit in the past). Consequently the students do not have enough time to study what they like. This, certainly, is detrimental to developing their abilities. It too pollutes the educational environment.

The second of my suggestions is related to the subjects taught. It is regarding the boundaries of subjects. No doubt, the man-imposed artificial boundaries among the several disciplines of science are gradually disappearing, but there is still an inertial drag to venture over and hybridise with the non-science offerings like management, administration, law, communication, economics, to name a few. The cross over is necessary if the graduate is to obtain success in the employment utilising his science in fields other than research. Even countries like China are planning to arrange certain courses of humanities and social sciences for engineering students. Such a cross over is necessary if we want a real socially useful educated student.

The third suggestion I would like to put forward is about the advantage of sense of competition and charm of award. If we want a high calibre science talent, we should arrange a **Science Olympiad.** Different disciplines of science be given several science games. To start with, the teams and individuals from all over India be invited to participate (the institutes like IIT, Delhi may think of becoming the first host). Then the same be arranged at Asia and then world level. It will encourage applied research in science, development of new scientific models and evolution of new phenomena. In an individual, in particular, it will awaken the sense of discovery and inventions. The persons like Shiv Bahadur Pandey who developed an indigenous 'day and data computer' but could draw no attention of scientists and authorities, and persons like Mange Lal Mali who developed indigenous rocket more than two decades back and injured his eyes would come in light at a sooner time and advantage of their genius could be taken by the nation.

Furthermore, a project should always form a part of curriculum. To lead the student to 'discover' one or more concepts and to clarify the different concepts

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by collection and analysis of data, the research project is a must. M.Sc. or M.A. purely by papers stands no where these days.

Finally I would like to discuss the different available media of teaching and their impact on educational environment.

Written texts are most common and trivial. Slides and audio tape presentations are in quite frequent use and doing a good job. Everyone of us is familiar with their benefits. The importance of hands-on demonstration with typical lab instruments is also well-known.

Video tapes are the recent ones and need a wide propagation and application. Videos can give the clue to the problems in higher education. Even the most difficult phenomenon can be illustrated and explained using a properly shot video film. Videos enable students to learn lab operations rapidly and more effectively. Handling of sophisticated instruments like Nuclear Magnetic Resonance, Infra Red Spectrometers, Microprocessors and Themogravimetric Balances etc. can be taught adequately. Showing of video film which has been shot from different angles while an experiment is being performed gives a conceptual teaching. Using a video same thing can be shown repeatedly till it is clear to students. A project in this direction involves the establishment of a versatile 'in lab' TV studio and establishment of a 'learning centre' in the various teaching departments. Four things are to be paid attention : (i) the presentation of material (e.g. pacing), (ii) technical quality (e.g. colour and contrast), (iii) style of programme (e.g. visuals); and (iv) effectiveness (e.g. attainment of objectives).

Use of computers is full of scope but is not yet drawing the desired attention. Computer basic languages and programming are to be taught to an undergraduate student in the future, irrespective of his offerings. In higher classes he/she has to apply it to gain knowledge. Under the supervision of various Computer Assisted Instruction (CAI) lessons, the student may explore the different systems. He may take help from Computer Assisted Experiments and Simulations (CAES). Student Opertated Calculator Routine Applied to Experimental Sciences (SOCRATES)—a computer programme is becoming popular in developed countries. Computerised Infra Red Spectroscopy known as 'Search System' is being provided by Perkin-Elmer Corporation, USA, since late seventies. Apple II microcomputers with fine graphic capabilities are now well-known. PET microcomputers have all the desired graphic capabilities, i.e., subscripts, superscripts and upper and lower case letters. The University of Nebraska in USA has a long back thrown Programs for the Advancement of College Teaching of Science (PACTS). Why such programmes cannot be thrown in our country with a modified designing in view of Indian environmental factors ? Such programmes can be prepared at different centres and then marketed and distributed by a central agency. Computer programmes in the sort of games are being used at University of Pittsburg to help teach descriptive chemistry. Out of the several Fortran programmes being implemented, I.D. is the one. It is a 20-questions game programme in which objective is to identify the unknown inorganic compound scoring a minimum number of points. Programmes like this force students to actively encounter descriptive chemistry and the life sciences.

Virginia Polytechnic Institute and State University, Blacksburg, are using effective and efficient interactive computing in-lab courses. They are having computer assisted analysis of spin-spin splitting patterns in nuclear magnetic resonance, analysis of hyperfine splitting in electron spin resonance, application of the dipolar shift equation to the analysis of lanthanide-shifted NMR spectra.

Use of lasers is the new technique getting its way in science teaching in USA.

Now a word about the facilities of higher technology for the handicapped which are part and parcel of our society. In East Carolina University, Greenville and in some other US Universities microcomputer system is in use to aid blind students in lab courses. The system can be interfaced to pH electrodes, visible and infrared spectrometers etc. The computer system has numerous analog and digital output channels. The microcomputer reads signals that would normally go to a meter or chart recorder and converts them to spoken output. The student gives the computer commands using a standard key board for input; the computer responds with a spoken output through a voice synthesiser module. A talking calculator programme has been developed so the student can perform calculations using the experimental data collected during an experiment. □

Agenda for Social Science Research

A one-day seminar on Agenda for Research in Social Sciences till the turn of the 20th Century was organised by Gujarat Vidyapith at the instance of the Indian Council of Social Science Research. Over fifty academics, research scholars and administrators representing the following institutions of Ahemdabad participated in the Seminar: Gujarat University, Gujarat Vidyapith, Sardar Patel Institute of Economics and Social Research, Indian Institute of Management, Gandhi Labour Institute, School of Planning, Space Application Centre, Institute of Cultural and Urban Anthropology, M.P. Arts and Commerce College, and St. Xavier's College. Police and Agricultural Departments of Gujarat Government and Scheduled Castes and Scheduled Tribes Welfare departments of the Government of India were also represented.

Dr. T.B. Naik, Director, Tribal Research and Training Institute of the Gujarat Vidyapith while welcoming the participants stressed the need for participatory research in social sciences and called upon the participants to shed off the elitist approach in conducting social science research. He said that conceptual clarity, unequivocal terse expression, and capacity for undergoing hardship were qualities necessary for doing sustained researches in social sciences. Prof. Ramlal Parikh, Vice-Chancellor, Gujarat Vidyapith, who inaugurated the seminar, called upon the participants to get deeply involved in seeking solutions to common problems. He indentified the following problems confronting social science research in India :

(i) Disenchantment with models of economic development;

(ii) Urgent need to develop a tradition of scientific and critical research;

(iii) Need for social scientists to break away from beaten paths and develop initiative in new ways of perceiving and defining social reality around us;

(iv) Need for a much greater and more coordinated effort at developing meaningful social science research whose end use was assured;

(v) Need for doing problem-centred research instead of discipline-centred research;

(vi) Need for making social science researches relevant to societal and national needs; and

(vii) Need to orient social science researches so as to lead to the formation of scientific concepts and theories relevant to national situation.

Prof. Parikh felt that there was an urgent need to strengthen liaison between education and the world of work in order to bring education closer to life. He said urgent research was needed on the problems of women which will produce the factual base needed for women to be integrated into development. He was also concerned about the major risks emerging in the relationship between man and nature like exhaustion or scarcity of certain non-renewable resources essential for human activities and irreversible damage that might jeopardize the balance of the biosphere. He desired social scientists to study these problems in the context of society and development as these were of decisive importance as regards environment. Prof. Parikh also referred to the arms race which posed an immediate threat to peace and constituted an enormous waste of human and material resources. He was convinced that whether the issue was peace or disarmament or human rights, the emphasis should be on reflection and research in a global and historical perspective, bringing out, in particular, the role that education, science, culture and communication could play in search of peace. He said that when the issue under consideration is the vast field of development, the comprehension of the problems and the quest for solution implies recourse to several disciplines operating in symbiosis; and, therefore the stressed acute need for research in social sciences in India.

Over a dozen papers were presented and discussed at the seminar. The contributors expressed their concern for problem oriented research. It was emphasised that research in social sciences must perform both the academic function as well as the change function. It was argued that such themes should be pursued as had a human meaning and social purpose. For instance, the role and status of minority community in the politico-economic evolution processes; political basis of communalism, regionalism and religious fundamentalism, legal, political and economic basis of reservation issues, democratic centralization in view of Central-State relations; and environment hazards and costs vis-a-vis industrialization.

The seminar was conducted in the following four panels that met concurrently :

1. Social Science of Resources;
2. Social Science of Human Relations;
3. Social Science of Peace; and
4. Social Science of Communication.

Each of the panels indentified themes that social science researchers should take up for further studies. These themes, the participants expected, will help them envision their role as social scientists in tackling local and national social problems calling for multiple policy instruments and multiple forms of interaction between the social sciences. The themes identified by the four panels are as follows :

Panel I : Social Sciences of Resources

1. Disparities in Gujarat : (i) Rural and Urban, (ii) Male and Female, (iii) Organized labour and unorganized labour; and (iv) Disparities in Education, Health and Nutrition, Housing, Material possession, Consumption, Savings, Wage rate and Employment;

2. Disparities among scheduled castes, scheduled tribes, caste Hindus and Minorities : (a) Dynamics of social change, (b) Direction of change;

3. Caste and communal tension in Gujarat in historical perspective;

4. Socio-economic study of drought-prone areas in Gujarat;

5. Role of social forestry in economic development;

6. Planning, implementation and evaluation of various development programmes at the local level; and

7. Role of Voluntary Organizations in socio-economic development.

Panel II : Social Science of Human Relations

1. Sociology of suicide among women of Gujarat;

2. Sociology of Prohibition in Gujarat—Its social impact on different strata of population;

3. Sociology of Reservation Policy and the Agitations in Gujarat;

4. Social problems arising due to migration of non-Gujaratis to Gujarat; Inter-relations between non-Gujaratis and Gujaratis;

5. Absence of nationalism among younger generation of Gujarat;

6. Voluntary Organization's role in promotion of Social Welfare;

7. Diminishing autonomy of Educational Institutions of various levels and its social impact;

8. Process of de-culturization among different cultural groups in Gujarat;

9. Sociology of violence at family level;

10. Un-organized women labourers in the rural and urban areas;

11. Study of Tribal migration (seasonal, short term and long term);

12. Growing influence of certain castes in the public life of Gujarat;

13. Historical research of Rural life in Gujarat;

14. Castes and tribes in historical perspective;

15. Critical study of documents and texts in rural areas of Gujarat;

16. Micro-studies of villages in historical perspective;

17. Sociology of Place—names in Gujarat;

18. History of migrations in the past;

19. Study of tribal societies in historical perspective;

20. Historical studies of the Princely States in Gujarat;

21. Agrarian movements in Gujarat;

22. History of Institutions in Gujarat; and

23. Social and economic factors behind popular movements in Gujarat.

Panel III : Social Science of Peace

The discussion in this panel veered around three main topics : (a) violence, (b) Peace; and (c) development.

(a) Violence

1. Causes and motives of intra-national violence : Ethnic, Class, Caste, Regional, on Women;

2. Studies on violence with a view to suggest remedies, cure and prevention;

3. Role of State in violence;

4. Voluntary agencies' role in curbing violence;

5. Violence vs. non-violence;

6. Study of International violence; Global military order; nuclear weapons; armament race; and trade; weapon culture; armament and human rights repression; armaments and third world development; disarmament and development; armament and coercive diplomacy; disarmament and United Nations; economics of armaments and disarmaments;

7. Study of terrorism;

8. Gandhian approach to violence; and

9. Study of exploitation as violence;

(b) Peace

1. Meaning and implication of Peace; Positive and negative Peace; Peace and violence; Peacelessness;

2. Studies on conflict and management of conflict;

3. Concept of Peace in ancient India;

4. Peace and non-alignment;

5. Third world contribution to Peace;

6. Peace and global transformation;

7. Peace education;

8. Peace and United Nations;

9. Towards a Peaceful world; Life Style of Peace ; Peace that liberates;

10. Nature of extended family in different societies; and

11. Attitude/expectation towards Peace;

(c) Development

1. Development and growth: its meaning, scope and ways;

2. Urban and rural development—question of dualism;

3. Philosophy and strategy of development;

4. Problem of environment;

5. Choice of technology;

6. Assessment and evaluation of planned development; Five Year Plans—Unilateral vs. multilateral approach;

7. North-south disparity and development;

8. Third world perspectives on development—Priorities, Self-reliance, Cultural identity, meeting the basic human needs; development and quality of life;

9. Defence vs. development;

10. Women and development;

11. Problem of urbanization;

12. Development in health, energy, habitat, food and ocean;

13. Towards an integrated and sustainable development; and

14. Future of development.

Panel IV : Social Science of Communication

Six major areas were identified by this group. Each area was thoroughly discussed in this group to suggest themes for research in this sphere. The area and themes considered were:

A. Language and Dialect

1. Dialects spoken in rural areas and their effectiveness because of mobility of rural population;

2. Role of languages in developing national unity and the kind of literature needed for this;

3. People's understanding and comprehension of the language used in Radio and Television transmission;

4. Development of dictionary suited for the changing society;

5. Learning of Gujarati language by non-Gujaratis;

6. Study of Hindi language as a socio-cultural vechile and contribution of non-Hindi speaking societies towards development of Hindi language; and

7. Research on development of Hindi language as envisaged in article 351 of the Indian constitution.

B. School Education

1. Formal Education — Research on devising ways and means to bring school education within the reach of vast majority of Indian population;

2. Non-formal/Distance education—Research towards developing programmes to provide educational facilities through Radio, Television, Correspondence courses and mobile schools to such segment of Indian population who reside in mountaneous, forest and desert regions;

3. Making people literate — Research on effectiveness of the programmes taken up for making illiterates literate;

4. Follow-up Research—(i) Impact of education on students' achievements; adverse impact; mobility;

(ii) Research on use of Hindi by Government officials in development Plan activities; and

(iii) Impact of community organizations on the life-style of changing societies.

C. Literature

1. Effect of different communication media in mobilising social development (Newspapers, various forms of literature, posters, folk-literature, radio, television, etc.)

2. Disappearing folk-literature of the backward communities;

3. Socio-economic studies of writers and their future role (Dalit literature and Dalit writers);

4. Study of organisations and institution concerned with study and education of literature;

5. Impact of Gandhian thought on Gujarati and Hindi literature during post-independence period;

6. Research on appropriate literature for children in the developing society; and

7. Impact of Gandhiji on literature.

Prof. Ramlal Parikh, Vice Chancellor, Gujarat Vidyapith who also delivered the valedictory address, observed that science, society and development were closely interlinked and one could not think of science and technology without taking into account the social contexts and implications. This, more than anything else, summed up the importance of the Seminar. ☐

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
August, 1936	Seminar on Adult Education and Libraries	Topics to be covered are: (i) NAEP and Libraries; (ii) Public Libraries and Extension work; (iii) Public Libraries and Mass Communication; and (iv) Academic libraries and Extra-Mural Activities	Jiwaji University, Gwalior	Dr. S.M. Tripathi, Head, School of Studies in Library and Information Science, Jiwaji University, Gwalior.
September 13-15, 1986	National Solar Energy Convention 1986	To evaluate the current status and trends in solar energy studies; to evolve methodology for collaboration among researchers and industrialists; and to identify technologies for harnessing renewable energy sources	School of Environment and Natural Resources, Madurai Kamaraj University, Madurai	Prof. T. M. Haridasan, Organising Secretary, National Solar Energy Convention—1986 School of Energy, Environment and National Resources, Madurai Kamaraj University, Madurai
October 1-4, 1986	Third National Conference on Women's Studies	To promote the development of Women's Studies in India by providing a forum for interaction amongst individuals, institutions and organisations engaged in teaching, research or action for women's development.	Indian Association for Women's Studies, New Delhi in collaboration with Panjab University, Chandigarh	Dr. Lucy Jacob, General Secretary, IAWS, L-3-D, University Campus, Jaipur
November 9-10, 1936	National Conference on Distance Education	Topics proposed to be covered are: (i) Concept of Distance Education; (ii) Forms of Distance Education; (iii) Course Designing and Preparations; (iv) Role of Media in Distance Education; (v) Financing of Distance Education; (vi) Student Support Services; (vii) Evaluation Methodology.	Association of Indian Universities, New Delhi; Indira Gandhi National Open University, New Delhi; and Gujarat University, Ahmedabad	Prof. B. N. Koul, Indira Gandhi National Open University, K-76, Hauz Khas, New Delhi. Mr. M.M. Ansari, Project Director (Research), Association of Indian Universities, 16 Kotla Marg, New Delhi
December 26-28, 1986	Seventh National Congress of Parasitology	Prophylaxis and control of parasitic diseases of man and his biosphere	Department of Bioscience, Ravishankar University, Raipur, in collaboration with Indian Societies for Parasitology	Dr. S.M. Agarwal (Organising Secretary) Vice-Chancellor, Ravishankar University, Raipur
January 6-9, 1987	International Seminar on Cement and Allied Building Materials	Exchange of knowledge and experience to assist the cement and building materials industries in their technological growth and development through regional and international co-operation and collaboration.	National Council for Cement and Building Materials, New Delhi	The Organising Secretary, National Council for Cement and Building Materials, M-10, South Extension Part II, Ring Road, New Delhi

Varsity Industry Nexus

Prof. K.K. Tewari, Minister of State for Public Enterprises reiterated Government's commitment to bring industries closer to universities. He was inaugurating a seminar sponsored by University Grants Commission and Department of Science and Technology and organised by University of Delhi. Industries are the backbone of economic development and purposeful interaction between universities and industries was crucial for the country. He lauded the achievements of the scientists and hoped that the seminar would lead to concrete suggestions and concrete action plans. Mr. Maheshwar Dayal, Secretary, Department of Non-conventional Energy Sources, who delivered the key-note address, said the industries and the universities have to create a climate of closer cooperation. The universities must channelise the creativity of the research students while the industry should associate them with the production processes. The government, he felt, must provide fiscal and other incentives and research and development facilities. Prof. P. C. Mathur of Delhi University Physics Department said that Delhi University intended to set up a cell to provide the mechanism to bring students and industries together. He hinted that they might even recommend changes in the syllabus to make it conform to the needs of industries.

Nearly 300 delegates from various universities and educational institutions in the country attended the seminar.

AP Medical University

The Union Health Ministry is reported to have cleared the proposal of the Andhra Pradesh Government for the establishment of a Medical University in the State. The Bill in this regard is presently under consideration of the University Grants Commission (UGC). Once the UGC has okayed it, it would be referred to the Ministries of Human Resource Development and Law before being sent to the President for his assent.

The University, the first Medical University in the country, would be located at Vijayawada where a foundation stone was laid by the Chief Minister, Mr. N. T. Rama Rao, earlier this year.

Structural Method of Research

A new method to conduct research in science and technology has been developed by Prof. R. Bhardwaj of the University of Bombay. Known as "structural method", the new method is an inter-disciplinary research and training approach to various scientific problems and policy issues and has been developed in view of the deepening methodological crisis in the areas of science and technology.

According to Prof. Bhardwaj, a first-ever course based on structural method was conducted at Bangalore recently at which the participants were encouraged to explore problems and conduct in-depth studies using not only the conventional methods but also by adopting the new approach. This provided them, Prof. Bhardwaj said, an opportunity to assess the appropriateness of the tools of analysis.

Madurai Varsity Plans Computer Literacy Programme

The Madurai Kamaraj University is reported to have drawn up a plan to introduce computers to rural population. This is intended to educate the rural people of the nuances of the computers. Camps will be organised in rural areas and the faculty members would impart the operation techniques.

The university also proposes to offer part-time courses in computers and set up a Computer Club for the benefit of housewives, school teachers and businessmen.

University for Eastern UP

The Uttar Pradesh Government has decided to set up a University in Jaunpur to cater to the needs of the eastern districts. According to the Chief Minister, Mr. Veer Bahadur Singh, the new University would offer courses in Science, Technology, particularly Electronics, and Commerce.

Residential Status for Allahabad and Lucknow Varsities

The Uttar Pradesh Government is reported to have decided to accord residential status to Allahabad and Lucknow Universities. This is being done with a view to lighten the academic burden of the universities and to improve their standards of education. The Chief Minister, Mr. Veer Bahadur Singh, announced that modalities for converting the two universities into residential institutions will be worked out soon and all the degree colleges hitherto affiliated to these universities would be affiliated to other universities.

Lucknow Varsity to Offer 3-Year Degree Courses

The Lucknow University, it is reported, will switch over to three-year degree courses for B.A, B.Sc. and B.Com. from the academic session 1986-87. This decision of the university would also be applicable to the students studying in the affiliated colleges

Degree Course in Computer Science

The University of Poona has decided to introduce a new three-year degree course in computer science in its ten affiliated colleges from the academic session 1986-87. The course content consists of hardware and software technology, mathematics and statistics for the first two years and specialisation in commercial, scientific or engineering streams in the third year. Selection to the course would be made through an aptitude test conducted by the colleges from amongst the students who had passed 12th standard.

Institute for Spoken English

The Madurai Kamaraj University plans to set up an Institute for Spoken English for office-goers, housewives and weaker sections of society. The non-structural course which included basic grammar and English conversation techniques would train the participants to express themselves better. According to the Vice-Chancellor, Dr. S. Krishnaswamy, a language laboratory would also be attached to the Institute that would have recorded speeches of celebrated personalities in audio and video-cassettes.

Punjab Opts for 10+2 System

The Punjab Government has decided to switch over to 10+2 pattern of education from the current academic session. The modalities with regard to courses and syllabi are being worked out.

The salient features of the new system are that Punjabi and English would be made compulsory and the examinations for the +2 stage would be conducted by the Punjab School Education Board only.

Goa Engg. College to Introduce Postgraduate Courses

The Farmagudei Engineering College, Goa has been permitted to introduce postgraduate courses in Foundation Engineering and Industrial Engineering by the All India Board of Postgraduate Studies and Research in Engineering and Technology in concurrence with the Central Government and the Government of Goa. While the Foundation Engineering will be offered as a full time course with an intake of 10 students including 5 sponsored candidates, the Industial Engineering course would be run on part-time basis.

Bihar to Introduce 3-Year Degree Course

The Bihar Government is reported to have decided to introduce three-year degree course from the next academic session. The State Education Minister, Mr. L.N. Jha, said that an Ordinance to this effect was likely to be promulgated soon. It has also been decided, the Minister added, to do away with the dual system of pass and honours course and to introduce three years' teaching for both these courses.

News from Agril. Varsities

Groundnut Variety M-335 Released

The State Variety Release Commitee in its meeting held at Punjab Agricultural University, Ludhiana has approved groundnut variety M-335 developed by crossing M-13 with an aphid resistant line F-7 in the Department of Plant Breeding. of the Punjab Agricultural University, for its general cultivation in the groundnut growing districts of the State during Kharif season under irrigated condition.

M-335 is a spreading variety which combines both high yield and early maturity. It has given an average yield of 2300 kg/ha and takes 124 days for maturity. Its shelling is 67% with a 100-kernel weight of 71 g and contains 49% oil in its kernels. In the All India Coordinated Research Programme on Oilseeds also, this variety has recorded yields of 2813 kg/ha and 1433 kg/ha under irrigated and rainfed conditions respectively.

Indo-Pak Cooperation in Agriculture

A five-member delegation from Pakistan headed by Dr. Amir Muhammed, Chairman, Pakistan Agricultural Research Council, visited the Haryana Agricultural University recently. The visit follows an agreement on agricultural cooperation between India and Pakistan. The delegation held discussions with the Vice-Chancellor and identified areas of co-operation in agriculture and animal research. The delegation was taken round the campus, various farms and research stations. The delegation was particularly impressed by the extension education and research programmes of the university.

AIU News

Inter-University Cooperation

AIU Sub-Committee on 'Mutual Cooperation amongst Indian Universities' finalised its recommendations recently. The Committee headed by Prof. S.V. Chittibabu, VC, Annamalai University and President, AIU comprised Dr. S. Krishnaswamy, VC, Madurai Kamaraj University, Dr. R. Subbayyan, VC, Bharathiar University, Prof. K.S. Shastri, VC, Gujarat University, Dr. A. Avasthi, VC, Rani Durgavati Vishwavidyalaya, Jabalpur, Principal K. Bhogishyana, VC, Shivaji University, Prof. Ramesh Mohan, VC, Meerut University, and Dr. Jagdish Narain, Secretary, AIU. Some of the important recommendations of the Sub-Committee are as follows:

Exchange of Faculty

Although many university teachers in India are taking up foreign assignments in the middle-east and the western countries, there was little movement within the country. Movement of faculty from one university to another will be healthy for academic and research purposes and will promote national integration. The following recommendations were made for consideration of the University Grants Commission (UGC):

1. Duration of such visits could be from one semester upto three years;

2. Restriction should not be placed on the visiting faculty on topics of their choice to enable them to share special areas of interest with the other members of the faculty;

3. Sufficient accommodation should be provided for the visiting faculty members in the university in a phased manner;

4. Two room furnished units may be provided in a block of 4 for the visiting faculty;

5. The expenditure on such construction should be met outside the 7th plan allocation: and

6. The visiting faculty should be allowed at least Rs. 100/- out of pocket expenses.

Cooperation amongst Libraries

Many universities/college libraries are finding it hard to continue subscriptions of foreign journals particularly in science and technology because of the escalating costs. Universities can be clustered together in groups so that they can plan their subscriptions of costly journals collectively. Each university will then subscribe to only some of the journals and regularly circulate the list of papers and their abstracts to all the sister universities. Exchange of journals or copies of papers can then be made through Inter Library Loan service. This acquires added importance as most of the universities will soon be acquiring telex facilities and some of them like Madurai Kamaraj University, Jawaharlal Nehru University, Poona University and Indian Institute of Science will be hooked up soon to International Information Science Service.

Training of Laboratory Technicians

Universities can assist each other in in-service training of the laboratory and other technical staff by organising short-duration courses particularly during vacations. These courses will enhance the quality of laboratory staff as also make them more familiar with the repair, maintenance and use of equipments.

Sharing sophisticated Laboratory Equipment

Many universities had acquired sophisticated equipment like Electron Microscopes, Spectrophotometers etc. which are being utilised for a limited time only. Such facilities should be liberally thrown open to faculty and research students of other universities as also qualified industry personnel in the region. Similar coordination is also recommended in the use of large computers which are available at some universities only.

Sale of University Publications

The Committee recommended that Book Cooperatives should be organised in universities. UGC and Govt. of India could be requested for financial assistance in this behalf. It was also suggested that all Indian Universities may place a standing order for 2-3 copies of non-textbook publications other than in regional languages published by other universities.

SCHOOL OF CORRESPONDENCE COURSES

Andhra University, Visakhapatnam-530 003

ADMISSION NOTIFICATION

Applications are invited from the candidates residing in India for admission into the following courses in the School of Correspondence Courses for the academic year 1986-87.

Course	Eligibility
1. Introductory Course (both English and Telugu medium). This course is offered to prepare the candidates for Entrance Examination to be held in April/May, 1987, for liberalised admission into B.A./B.Com. Courses without any formal academic qualification by supplying study material : 6 months duration.	No formal academic qualification is required. But the candidates should have completed 21 years of age by 1-7-1987.
2. B.A. (both English and Telugu medium) with the combinations of Spl. English, Spl. Telugu, History, Economics, Politics, Public Administration, Sociology and Mathematics : 3 years duration.	Intermediate/P.U.C. or equivalent or pass in the Entrance Examination conducted by this School.
3. B.Com. (both English and Telugu medium) with an elective subject Costing or Secretarial Practice ; 3 years duration.	Intermediate/P.U.C. or equivalent or pass in the Entrance Examination conducted by this School.
4. B.Sc. (English medium only) with the combinations of Mathematics, Physics and Chemistry : 3 years duration.	Intermediate/P.U.C. or equivalent with Physical Sciences and Mathematics.
5. M.A. Economics (English medium only): 2 years duration.	B.A. with Economics (Main or Ancillary).
6. M.A. English Language and Literature : 2 years duration.	B.A./B.Sc./B.Com.
7. M.A. Public Administration (English medium) : 2 years duration.	B.A. with Politics or Pub. Admn. as Main or Ancillary or B.L. or B.G.L.
8. M.Com. (English medium only), Specializations offered : Taxation, Banking, Accounts, Agricultural Economics & Co-operation : 2 years duration.	B.Com. only.
9. Post-Graduate Diploma in Co-operation and Rural Studies (English medium only) Admission is open to in-service candidates working in co-operatives and Allied institutions including non-officials : 1 year duration.	B.Com./B.A. (Economics as Main or Ancillary)/ B.Sc. (Agriculture).

Applications will be issued from 25-7-1986. Filled-in applications should reach the undersigned on or before **30-9-1986**.

Intending candidates may write to the undersigned by Designation for application form and prospectus by sending Rs. 5/- by D.D./M.O. The candidates may also remit cash at the CASH COUNTER towards application form and prospectus. Postal Orders and Cheques will not be accepted. The School has no agents and takes no responsibility for the prospectus issued and promises made for admission by any other institution.

Note : *Candidates who appeared for the B.A./B.Com. Entrance Examination held in May, 1986 may write for application form and prospectus after receiving the marks-cum-eligibility certificate.*

Prof. V. Abraham
DIRECTOR

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertations as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.30 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

SOCIAL SCIENCES

Sociology

1. Samrakar, Gopal Prasad. *Narmada Ghati ke jan jatiya samudayon kee samajik, sanskritik vyavastha evam vankana aropan pratiman evam adhyayan.* HS Gour. Dr. N.K Gurcha.

2. Vignesha, M.S. *Socio-cultural, demographic and communicational aspects of animal husbandry.* Shivaji. Dr. J.B. Ambekar.

Political Science

1. Patil, Baburao Bhimrao. *Y.B. Chavan : A critical study.* Shivaji. Dr. K.K. Kavlekar.

2. Singh, Brij Nath. *Rashtriya Mandal aur Bharat : Ek vivechanatmak adhyayan*, 1947 *se* 1985 *tak.* Devi Ahilya. Dr. Om Nagpal.

Economics

1. Chakravarty, Dasarathy. *Role of indirect taxes in the developing economy of Madhya Pradesh from* 1957-58 *to* 1984-85. Devi Ahilya. Dr. S.R. Sondhy.

Law

1. Dube, Anand Kumar. *The Problem of the tax evasion and taxation laws relating to firms in India.* HS Gour. Dr. G.P. Tripathi.

2. Mishra, Om Shankar. *A critical evaluation of the law relating to protection and reservation of environments.* HS Gour. Dr. G.P. Tripathi.

Commerce

1. Chandan, Chaman Lal. *Japanese management practices and Indian business environment.* HP. Dr. M.K. Sharma.

2. Kolekar, Bajarang Dattatray. *A study of human resources development in selected public sector undertakings in Maharashtra and Goa.* Shivaji. Dr. P.S. Rao.

3. Kuldeep Kumar. *Performance evaluation of public sector in India since independence.* HP. Dr. Suresh Kumar.

4. Lakhanpal, Ajay K. *Institutional framework for entrepreneural development in Himachal Pradesh.* HP. Dr. M.K. Sharma.

5. Parmar, K.K. *Marketing effectiveness of extension education on Himachal Pradesh Krishi Vishwavidyalaya.* HP. Dr. Y.S. Verma.

6. Sanbhayan, Chaman Lal. *Performance appraisal of co-operative banks in Himachal Pradesh.* HP. Dr. Balram Dogra.

HUMANITIES

Language and Literature

English

1. Jernail Singh. *Novels of Norman Mailer : A study of his moral vision.* Panjab. Dr. (Miss) Kiran Sahni.

2. Kang, Diljit Singh. *Love and suffering in the plays of J.M. Synge*. Panjab. Dr. Ishwar Dutt.

Sanskrit

1. Angiras, Ashutosh. *A critical and comparative study of pratyabhijna and pratibha in Trika system of Indian philosophy*. Panjab. Dr. V.P. Upadhyaya.

2. Jain, Sadhvi Suprabha Kumari Sudha. *Pramukh Jain aagamon mein Bharatiya darshan ke tattwa : Vaidik tatha Boddh chintan dharaon ke vishesh sandarbh mein*. Devi Ahilya. Dr. P.N. Kavthekar.

3. Satish Chander. *Vigyanvad aur advaitvad kee drishti se gaurpadkarika ka alochanatmak vishleshan*. Panjab. Dr. Dharmanand.

4. Shukla, Anjana. *Kuntaka evam crorce : Ek sameekshatmak evam tulnatmak adhyayan*. BHU. Dr. N.K. Lal.

5. Vasishth, Vinod Kumar. *Panditraj Jagannath ke kavyon ka alochanatmak adhyayan*. Panjab. Dr. Anirudh Joshi.

Punjabi

1. Balbir Singh. *Theme of partition in Punjabi novel : A critical study*. Panjab. Dr. Raghbir Singh Sirjana.

2. Jagir Singh. *England dee Punjabi kahani da adhyayan*. Panjab. Dr. Raghbir Singh Sirjna.

3. Kanwaljit Kaur. *Ideological basis of Punjabi drama*. Panjab. Prof. Attar Singh.

4. Manjit Kaur. *I.C. Nanda, Sant Singh Sekhon ate Balwant Gargi de natakan vich istri patar : Ek alochanatmak adhyayan*. Panjab. Dr. Raghbir Singh.

5. Paramjit Singh. *Bajaroo Punjabi novel vidhite parkarj*. Panjab. Dr. Kesar Singh Kesar.

6. Prem Kaur. *Principal Teja Singh ate Dr. Sahib Singh dian sawaijeevanian da tulnatmak adhyayan*. Panjab. Dr. Karta Singh Suri.

Hindi

1. Jain, Kusumlata. *Jain Diwakar Munishree Chouthhmalji. Ma. La. Vyaktitva evam sahityik krititva evam anusheelan*. Devi Ahilya. Prof. G.D. Tripathi.

2. Mali, Khaserao Pandurang. *Sahityabhiruchi aur Hindi sahitya*. Shivaji. Prof. P.P. Pathak.

3. Savitri Devi. *Mohan Rakesh ke sahitya mein istri purush sambandh*. Panjab. Dr. Yash Gulati.

Marathi

1. Deshpande, Kalyan Narayan. *Marathi kaveeche Nath sampradayee sahitya*. Shivaji. Dr. P.V. Kulkarni.

2. Khandekar, Ramesh N. *Shri Jayavant Dalvi yanchya sahityacha chikitsak abhyas*. Devi Ahilya. Dr. S.M. Sawant.

History

1. Gautam, M.L. *Pracheen Bharat mein nyaya vyavastha*. HS Gour. Dr. R.M. Agrawal.

2. Hadirkar, Bilas. *Pracheen Bharat mein kar vyavastha : Pracheen kal se satveen shatabdi tak*. HS Gour. Dr. R.N. Agarwal.

3. Pandey, Mari Nivas. *Fiscal system in early mediaeval India*, C. 700 *A.D.*-1200 *A.D.* BHU. Dr. M.S. Shukla.

4. Rana, Krishna Mohan Pratap Singh. *Mrichakatikam ka ek sanskritik adhyayan*. BHU. Prof. P. Singh and Dr. A.N. Yadav.

5. Sharma, Manoj Kumar. *Gunakshetra kee pracheen kala ka adhyayan*. HS Gour. Dr. S.N. Matwani.

6. Shukla, Mahesh Prasad. *Hamirpur Jile ka puratattva*. HS Gour. Dr. R.N. Agarwal.

7. Thakur, Argun Singh. *Bhopal kshetra kee brahman dev pratimaon ka alochanatmak adhyayan*. HS Gour. Dr. R.N. Agarwal.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Sociology

1. Bhatnagar, Damyanti. *Bureaucracy in a Commissioner's headquarters: A study of its interaction pattern and culture*. Ravishankar.

2. James, C.J. *A comparative study of suicides in Tamilnadu and Kerala with special reference to females*. Madurai.

3. Lalthanglina, R. *Occupational mobility among the Mizos*. NEHU.

4. Mandavdhare, S.M. *Spatial patterns of caste distribution and land relations in Marathwada*. JNU.

5. Pandey, Kaushal Kishore. *The socio-economic problems of the factory workers in India and Nepal with special reference to the sugar industry workers*. Gorakhpur.

6. Sandhya, S. *Demographic, socio-economic and cultural correlates of infant mortality : A case study of a developed and an underdeveloped region of Andhra Pradesh*. JNU.

7. Saxena, Rajol Kumar. *Chambal Ghati mein atmsamarpit dakaiton ka punarvas*. Jiwali.

8. Singh, Aruna Kumari. *Janjatiya samaj mein istriyan : Visheshtaya ek poorva aparadhi janjati ke sandarbh mein*. HS Gour.

9. Somashekharappa, C.A. *A sociological study of an industrial complex*. Karnatak.

Political Science

1. Basu, Anup Ranjan. *Algerian foreign policy*, 1962-1972. Jamia.

2. Jaitly, Aman. *Changing patterns of India's political culture : An enquiry into the epistemological basis of culture* Rajasthan.

3. Saidun Nessa. *Emergence and role of the Assamese middle class*. NEHU.

4. Sharma, K.L. *The political ideas of G.D.H. Cole*. Delhi.

5. Taheen, Rana. *Urban administration in Allahabad, 1947-72.* Jamia.

6. Tiwari, Vinod. *Rajnaitik chetna Raipur, gramin evam shahri : Vidhan Sabha kshetra ke sandarbh mein ek adhyayan.* Ravishankar.

7. Tripathi, Ranjana. *Political orientations of industrial workers in Kanpur.* JNU.

Economics

1. Dey, N.K. *Contribution of homestead and orchards to family income in Assam : A case of the Tinsukia Sub-Division of Dibrugarh District.* Dibrugarh.

2. Gogoi, Girin. *Urbanization in Assam,* 1901-1971. Dibrugarh.

3. Mohammed Ikbaal Menon. *Problems and prospects of regulated agricultural produce markets in Raipur District.* Ravishankar.

4. Mundinamani, Parappa Shankarappa. *Agricultural development in Karnataka.* Karnatak.

5. Patel, Haribhai Fulabhai. *Economics of irrigation in Gujarat.* Patel.

6. Patel, Kanubhai Ambalal. *The nature significance and measurement of risk in the non-foodgrain crop farming.* Patel.

7. Patel, Vaijaiyanti. *Economic analysis of the area production and productivity changes in major crops in Jabalpur Division, M.P.* Durgavati.

8. Rama Krishna, Rayavarapu. *Indebtedness among landless agricultural labour households and the role of institutional finance : A case study of Nakkapalli Block, Visakhapatnam District, A.P.* Andhra.

9. Sagar, Sushma. *Poverty in Rajasthan.* Rajasthan.

10. Vishwakarma, Anand Kumar. *Prabandh mein shramikon kee bhagidari tatha uska Bhilai Ispat Sanyantra mein prayog.* Ravishankar

Law

1. Dixit, Vinod Kumar. *Dispute settlement process in the non-state legal system of Meenas of Rajasthan : A study in legal anthropology.* Delhi.

2. Govindaraj, V.C. *Legal status of land locked states.* Delhi.

Public Administration

1. Dave, Sajjanlal. *Development administration in urban context : A study of Nagpur Improvement Trust.* Nagpur.

2. Rathore Girwar, Singh. *Tehsil administration in Rajasthan.* Rajasthan.

3. Sharma, Ashok. *Bharat mein niravachan prashasan : Rajasthan niravachan tantra ke sandarbh mein.* Rajasthan.

Education

1. Das, Joy Chandra. *A study of the administration of examinations of the Board of Secondary Education, Assam with special reference to the impact of the reform introduced since 1976 on the conduct of H.S.L.C. examination.* Gauhati.

2. Dey, Atindra Nath. *Study of anthropometric measurements and body composition of high and low cardiorespiratory fitness boys.* Jiwaji.

3. Dholakia, Bhavyakant Jeluprasad. *A study of the effectiveness of various strategies for improving reading comprehension in English of pupils of class IX in the context of some variables.* Patel.

4. Kalyanmurkar, Shusheela. *The effect of micro-teaching on the teaching competence of inservice teachers and its impact on pupils attainment and pupils liking* Devi Ahilya.

5. Kazi, Sartaj A. *The critical study of development of Urdu curriculum at secondary education in Maharashtra.* Nagpur.

6. Kulsum, Umme. *Influence of school and teachers variables on the job satisfaction and job involvement of secondary school teachers in the city of Bangalore.* Bangalore.

7. Lal Krishna. *Adult education in the union territory of Delhi : A critical case study.* Jamia.

8. Patel, Hiralal Sendhabhai. *A study of frustration among primary school teachers in relation to certain variables.* Patel.

9. Patel, Niketanbhai Kalidas. *A comparative study of educational ideas according to philosophy of Shri Aurobindo and Jainism.* Patel.

10. Raghavendra Rao, Angara Veera. *An investigation into the relative effectiveness of guided discovery and expository approaches of teaching mathematics.* Andhra.

11. Rajendra Singh. *An investigation into the relationship between achievement motivation, intelligence, (General mental efficiency introversion, extroversion achievement in mathematics and a comparison thereof between Delhi and Haryana students belonging to various socio-cultural strata.* Jamia.

12. Shree Ram. *A study of the philosophy and practices of the secu denominational and ideological educational institutions with special reference to Rajasthan.* Rajasthan.

13. Sontekey, Veena Virendra. *A comparative study of personality factors and achievement motivation of high and low achievers in natural and biological sciences.* Nagpur.

14. Tewari, Amba Datt. *An investigation into the inter-relationship between measures of selected Guilford's S.I. factors and set concept achievement of secondary level students of Delhi state.* Jamia.

Commerce

1. Awasthi, Shashi Bhushan. *State Financial Corporation of Madhya Pradesh : An evaluation of its working and achievements.* HS Gour.

2. Das, V. Mukunda. *A frame work for analysing rural marketing in India.* Patel.

3. Pathak, K. *Indo eec trade during seventies with special reference to U.K.* Ravishankar.

4. Sarkar, Nripendranath. *Bank nationalisation and corporate financing in India.* Calcutta.

5. Shrivastava, Ajay Prakash. *A study of distributional aspects of the food problem in India.* Durgavati.

Home Science

1. Dhawan, Rita. *A comparative study of the nutritional profile of young pregnant women in rural and urban areas of Ludhiana.* PAU.

2. Mahajani, Sneha Ramesh. *A study of housing conditions in rented and owned houses of middle class families in urban and rural area of Akola District.* Nagpur.

3. Sharma, Kamlesh. *Personality correlates of highly accepted children.* Ravishankar.

Council of Scientific and Industrial Research

ADVERTISEMENT No. 10/86

It is proposed to appoint a Scientist-F for the National Geophysical Research Institute, Hyderabad. The major area of R & D work at the Institute is Geophysics.

Job Requirement : The incumbent will be required to plan, formulate, coordinate and guide R & D activities and provide high level leadership to team of experienced scientists in planning, implementation and management of a large computer centre and towards the generation and development of special applications software for geophysics particularly for seismic data processing. Besides this, the scientist will be required to assist the Director in scientific, technical and administrative matters, as and when necessary.

Qualifications : High academic qualifications with first class Master's Degree in Geophysics/Physics/Maths/Statistics/Computer Science. Should have an established reputation in the field and 10 years of proven record of research and developmental work and creative ability in the area.

Salary/Conditions of Service : The scale of pay attached to the post is Rs. 2000-125/2-2500 plus allowances as admissible under Central Govt. Rules. This is a contractual appointment initially for a period of six years. The contract is extendable and the incumbent can also be confirmed. Consultancy subject to an upper limit of Rs. 15,000/- per annum is permissible. Free medical aid and leave travel concession are also permissible for the family as per Govt. rules. Residential accommodation will be provided on payment of usual rent subject to availability.

Age : Preferably below 50 years, relaxable in deserving cases.

A duly constituted Screening Committee will decide on the number of Scientists to be invited to meet the full Selection Committee. The decision of the Council on this behalf will be final. Applications from employees working in Govt. Departments, Public Sector Organisations and Govt. funded research agencies will be considered only if forwarded through proper channel and with a clear certificate that the applicant will be relieved within one month of receipt of the appointment orders.

Those interested may kindly send in their curriculum vitae in duplicate in the form obtainable from the Joint Secretary (Administration), CSIR, Rafi Marg, New Delhi-110 001 on or before **18th Sept., 1986.** Any information about the National Geophysical Research Institute can be obtained in writing from the Director, NGRI, Hyderabad-500 007.

Birla Institute of Technology and Science

PILANI 333031 (RAJASTHAN)

No : Advt./2 86/Gen. Estt. **Dated : 18th July, 1986**

Applications are invited for the following positions :

Position		Salary Scale
1. Chief, Workshop	:	Rs. 1500-60-1800-100-2000-125/2-3000
2. Librarian	:	-do-
3. Maintenance Asstt.	:	Rs. 700-40-1300
4. Public Relations & Security Officer	:	Rs. 550-25-700-30-1000
5. General Manager, Coop.	:	-do-

All posts carry D.A. of about 50% of basic salary. Higher starting salary to deserving candidates. Housing on nominal rent, tuition fee waived for self, spouse and children in Institute and local schools. Medical reimbursement, L.T.C., C.P.F. and Pension benefits.

The positions of Chief, Workshop and Librarian are academic and their assignments include teaching work also for which an additional allowance of Rs. 200/- p.m. is payable.

Prospective applicants may obtain further details by sending a self-addressed and stamped envelope (9" × 4") to the Registrar, BITS, Pilani.

Applications, completed in all respects, should be submitted to the undersigned within 45 days of the publication of this advertisement.

REGISTRAR

Council of Scientific and Industrial Research

ADVERTISEMENT No. 11/86

It is proposed to appoint one Scientist 'F' for the National Aeronautical Laboratory, Bangalore.

Job Requirements : This is a senior research position and the incumbent is required to lead the crystallography, metal physics and high pressure physics group of the Material Science Division of the laboratory and take responsibility for all R & D activities in these areas. The incumbent will also be required to provide high level leadership in the application of X-ray crystallography with particular reference to metallic materials in regard to their mechanical behaviour. The incumbent will also be expected to provide leadership in the area of high pressure research to develop new materials through phase transformations under high pressure at temperatures and also take up basic research in pressure induced changes in the physical properties. It may also be necessary for the selected candidate to take up administrative responsibilities of the Division as and when deemed necessary by the Director.

Qualifications/Experience : Ph.D. in Physics or Metallurgy with atleast ten years of R & D experience, with sound indepth knowledge in the above fields and should be familiar with current developments in the above fields elsewhere in the world.

Salary/Conditions of Service : The scale of pay attached to this post is Rs. 2000-125/2-2500 plus allowances as admissible under Central Government Rules. This is a contractual appointment initially for a period of six years. The contract is extendable and the incumbent can also be confirmed. Consultancy subject to an upper limit of Rs. 15,000/- per year is permissible. Free medical aid and leave travel concession are also permissible for the family as per Government rules. Residential accommodation will be provided on payment of usual rent subject to availability.

Age : Preferably below 50 years, relaxable in deserving cases. A duly constituted 'Screening Committee' will decide on the number of Scientists to be invited to meet the full Selection Committee. The decision of the Council in this behalf will be final. Applications from employees working in Government Department, Public Sector Organisations and Government funded research agencies will be considered only if forwarded through proper channel and with a clear certificate that the applicant will be relieved within three months of receipt of the appointment orders.

Those interested may kindly send in their Curriculum vitae in duplicate in the form obtainable from the Joint Secretary (Admn.), Council of Scientific and Industrial Research, Anusandhan Bhavan, Rafi Marg, New Delhi-110 001 on or before **25-9-1986**. Any information about the laboratory can be obtained in writing from the Director of the National Aeronautical Laboratory, Bangalore-560 017.

BHARATHIAR UNIVERSITY

COIMBATORE-641 046

Advertisement No. 4299/E1/86 **Dated : 17 July, 1986**

Applications are invited for the following posts:

	No. of Posts	Qualification and Experience
I. Deptt. of Computer Sciences		
1. **Reader**	2 (OC-1 SC/ST-1)	A. A Consistently good academic record. B. A Ph.D. from an Indian or a Foreign University in Computer Science OR Computer Applications Information Systems OR Engineering with specialisation in Computer Applications and Information Systems and 5 years of Teaching/Research Experience in the field of Computer Science or Computer Applications. OR M.E./M. Tech. with Computer Specialisation or M.C.A. with 7 years of Teaching/Research Experience in the field of Computer Science or Computer Applications. Candidates with research interest in Systems Support/DBMS/Experience in Software design would be preferred. Maximum Age as on 01.07.1986—45 YEARS. **Scale of Pay** : Rs. 1200-50-1300-60-1900.
2. Systems Analyst	1 (SC/ST)	A. A First Class M.E./M. Tech. in Computer specialisation with at least two years of proven Experience in Business/Industrial Software Design, Development and Implementation. OR A First Class M.Sc. (Applied Mathematics), M.Sc. (Statistics with at least three years of proven experience in Business/Industrial Software Design, Development, and Implementation. B. Knowledge of FORTRAN, BASIC COBOL, PASCAL essential and 'C' preferable. Maximum Age as on 01.07.1986—35 YEARS **Scale of Pay** : Rs. 700-40-1100-50-1600.
3. Key Punch Operator/ Systems Operator	2 (OC-1 SC/ST-1)	A. A First Class Bachelor's Degree/Diploma in Engineering B. Typewriting—Higher (English) C. At least 2 years of experience in Operation of Mainframe/Mini Computer Systems. D. Knowledge of programming languages preferable. Maximum Age as on 01.07.1986—30 YEARS. **Scale of Pay** : Rs. 610-20-730-25-955-30-1075.

Any candidate applying for more than one post shall send separate application for each post.

Application form can be had from the Registrar, Bharathiar University, Coimbatore-641 046 on requisition accompanied by a self addressed 90 paise stamped envelope (25 cm × 10 cm). Name of the post for which the application is intended shall be specified in the requisition.

- Attested copies of certificates showing qualifications, age, experience etc., should be sent along with the application in the prescribed form (in Eight Copies) together with Registration fee of Rs. 10/- in the form of Crossed Indian Postal Order dated not earlier than 01.07.1986 drawn in favour of the Registrar, Bharathiar University, Coimbatore-641 046.

Candidates in service shall submit their applications through proper channel.

Completed application should reach the Registrar on or before **18-8-1986.**

Incomplete applications and applications without the required registration fee will not be considered.

REGISTRAR

CLASSIFIED ADVERTISEMENTS

AMRAVATI UNIVERSITY

EMPLOYMENT NOTICE

Advt. No. 1-B/4243/86 **Dated : 19-7-86**

Applications are invited for following posts :

Reader in Business Administration and Management :

Scale : Rs. 1200-1900/-. **Qualification** : Good academic record with Doctoral Degree or equivalent published work. Evidence of being actively engaged in (i) Research or (ii) Innovation in teaching methods, or (iii) Production of teaching materials and 5 years experience of teaching or research. Provided that atleast 3 of these years were as lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Programmer : Scale Rs. 680-1250/-. **Qualification** : Bachelor's Degree in Computer Engineering/ Computer Science/ Electronics OR Post-Graduate Degree in Mathematics/ Statistics/ Physics (Electronics) and post-graduate Diploma in Computer Science. Two years working experience of software development in a Computer Centre.

Statistician : Scale Rs 500-900/-. **Qualification** : Master's Degree in Statistics/ Mathematics/ Economics/ Commerce or Honours Degree atleast in 2nd class in Statistics/ Mathematics/ or Economics of recognised University with Diploma in Statistics of recognised Institute with experience of 2 years of applications of statistical methods. Preference will be given to S.C. candidates.

Statistical Assistant : (*Reserved for ST or VJNT*) : **Scale** : Rs. 335-680/- **Qualification** : Master's Degree in Mathematics/Economics/ Commerce/ Agriculture or Statistics OR Bachelor Degree in atleast 2nd class with Mathematics/ Economics/ Commerce/ Agriculture or Statistics as a subject.

Technical Assistant : Scale Rs. 365-760/-. **Qualification** : Graduate with two years experience to operate appropriate Computer. Preference will be given to S.C. Candidate.

Age limit : As per rules.

Prescribed application forms can be had from University Office on payment of Rs. 25/- for the post of Reader and Rs. 10/- (Rs. 5/- SC/ST) for remaining posts, through Bank Draft or Crossed IPO in favour of undersigned and applications alongwith crossed IPO of Rs. 15 (Rs. 7.50 SC/ST) should reach the undersigned by **26th August, 1986.**

S.S. Chaube
REGISTRAR

THE CENTRAL UNIVERSITY PONDICHERRY

THE SCHOOL OF MANAGEMENT

Advertisement for Faculty Positions

The Central University Pondicherry is launching significant programmes of Post-graduate training in Management and the University invites applications from highly qualified personnels to fill up various faculty positions.

Candidates with deep sense of dedication to student enrichment and excellence in the areas of specialisation will be preferred.

Applications are invited from Indian *citizens in the prescribed format for the following faculty positions*

A. PROFESSORS

With specialisation from among the areas of (a) **Marketing (b) Production and Operations Management (c) Management Informations System, and (d) Financial Management and Costing.**

B READERS LECTURERS

With specialisation from among the fields of (a) Marketing, (b) Production and Operations Management, (c) Financial Management and Costing, (d) Quantitative Methods. (e) Management Information Systems; and (f) Personnel Management

Qualifications and Experience

(a) Professor

Essential : A Ph.D., in the area of specialisation with a consistently brilliant academic record including Master's Degree in Management and experience of teaching in an established University or National Institute or an Industrial or Business undertaking of repute.

Desirable : *Publications evidencing original* work including articles in journals of repute.

B. Reader

Essential : A Master's Degree in Management in the area of specialisation followed by a Ph. D. degree.

Desirable : Experience in teaching in a recognised college or University or equivalent experience in an Industrial or Business undertaking of repute.

C. Lecturer

Essential : A Post-graduate degree in Management.

Desirable : Experience in teaching at College level.

Age

(a) Professor	: Not exceeding 50 years
(b) Reader	: Not exceeding 45 years
(c) Lecturer	: Not exceeding 40 years

Scale of Pay

(a) Professor	: Rs. 1500-60-1800-100-2000-125/2-2500
(b) Reader	: Rs 1200-50-1300-60-1900
(c) Lecturer	: Rs. 700-40-1100-50-1600

In addition to pay these posts carry *usual allowances as per UGC norms which* are likely to undergo revision soon

Higher starting pay may be paid in deserving cases on the recommendation of the Expert Selection Committee. Restriction on age may be relaxed at the discretion of the Selection Committee in deserving cases.

The gross emoluments per mensem at the minimum and maximum will be approximately.

		Min Over Rs.	Max Over Rs.
(a) Professor	:	3300	5300
(b) Reader	:	2950	4100
(c) Lecturer	.	1980	3400

Last date for receipt of applications : 22nd August, 1986.

Applications in **duplicate** neatly typed on plain paper in the format given below with all relevant documents like Degree Certificates, proof of age, testimonials, etc. *should be sent to the* **Registrar, The Central University, Pondicherry-605 001** so as to reach him on or before **22nd August, 1986.**

(Name of Post) Format

1. Name of the applicant :
2. Address (to which the communication to be sent) :
3. Nationality and Sex :
4. Age and Date of Birth :
5. Community (SC/ST with community certificates) :
6. Qualifications (with copies of certificate) :
7. Experience, if any :
8. Present position :
9. Any other relevant information .
10. Two Academic references (with names and address) :
11. List of enclosures :

Date SIGNATURE OF THE APPLICANT

Application Fee

Applications should be accompanied with the prescribed fee of Rs. 30/- (Rupees thirty only) for **each** post. Rs. 10/- (Rupees ten only) for candidates belonging to Scheduled Castes and Scheduled Tribes) in the form of crossed Indian Postal Order drawn in favour of **Finance Officer, Central University Pondicherry.**

Candidates already in Government service should produce a '**No Objection Certificate**' from their employer at the time of interview.

In case suitable candidates are not available the University reserves the right to invite eminent persons for direct appointment.

P.R. Ramanathan, I.A.S.
REGISTRAR

UNIVERSITY OF RAJASTHAN JAIPUR

ADVERTISEMENT No. ESTT./II/86/VI

Dated : 21-7-86

Applications are invited (through proper channel in case of those who are already in employment) so as to reach this office on or before 11.8.86 in the prescribed form obtainable from the Registrar's office on pre-payment of Rs. 4/- (Rs. 4/- extra in case required by post) for the following posts:—

1. **Additional Registrar** : 1
   Scale of Pay : Rs 1600-50-1800-60-2100-75-2325.
2. **Associate Director** : 1 (Deptt. of Adult and Continuing Edu.).
   Scale of Pay : Rs. 1500-50-1800-60-2100-75-2250.
3. **Project Officer** : 1 (For Deptt of Adult and Continuing Education under AEP Project, up to **31-3-90**).
   Scale of Pay : Rs. 700-40-900-EB-40-1100-50-1300.
4. **Programme Organiser** : 1 (For Department of Adult and Continuing Education in Lieu of temporary post but likely to be permanent).
   Scale of Pay : Rs. 820-20-900-25-1000-30-1300-40-1500-50-1550.
5. **Gas Mechanic** : 1 (For Deptt. of Chemistry)
   Scale of Pay : Rs. 490-10-550-15-640-20-840.
6. **Electronic Engineer** : 1 (For Deptt. of Physics).
   Scale of Pay : Rs. 1100-50-1600 (UGC Pay Scale).
7. **Senior Technical Asstt. (Electronic)** : 1 (For Deptt. of Physics)
   Scale of Pay : Rs. 550-25-750-EB-30-900) (UGC Pay Scale)
8. **Workshop Superintendent** : 1 (For Deptt. of Physics)
   Scale of Pay . Rs 820-20-900-25-1000-30-1300-40-1500-50-1550.

Notes .

1. Details of qualification etc. will be made available with application form
2. Number of posts indicated above may be altered by the Univ. without notice.
3. Retired persons need not apply.
4. Incomplete applications and/or applications received on plain paper and/or after **11-8-86** will not be entertained in any case.
5. Dearness and other allowances are admissible as per Univ. rules.
6. Candidates will be called for interview at their own expenses.

REGISTRAR

MEERUT UNIVERSITY

MEERUT

Applications are invited for the following teaching posts. The application on prescribed form should reach the REGISTRAR : MEERUT UNIVERSITY : MEERUT - 250005 latest by **25-8-86.**

A. One post of Reader in each subject : (1) ZOOLOGY (Parasitology/Ichthyology/Physiology), (2) PHYSICS (Leave vacancy for about one year) in the Grade of Rs. 1200-50-1300-60-1900.

Minimum Qualifications

1. Good academic record with doctorate degree or equivalent published work and active engagement in research or innovation in teaching methods or production of teaching materials; and
2. Five years experience of teaching or research including at least three years as Lecturer or in an equivalent position.

Provided that the requirement contained in clause (2) may be relaxed in the case of a candidate who in the opinion of the Selection Committee, has outstanding research work at his credit.

B. One post of Lecturer in each subject : (1) **Botany** (Leave vacancy), (2) **English** : (Preferential specialization in Modern British Poetry/American Fiction/English Language Teaching/Comparative Literature), (3) **Zoology**, in the grade of Rs. 700-40-1100-50-1600.

Minimum Qualifications

1. (i) A doctor's degree or research work of an equally high standard in the relevant subject; and
   (ii) Consistently good academic record with First or High Second class Master's degree or an equivalent degree of a foreign university in the relevant subject.
2. Where the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard it may relax any of the qualifications prescribed in 1(ii) above.

NOTE: Other things being equal, preference will be given to the scheduled caste/tribe candidates who are considered fit Such candidates should attach certificate to that effect from the District Magistrate.

Prescribed application form can be obtained by sending a request to the Dy. Registrar (Accounts), Meerut University, Meerut-250005 along with a self-addressed envelope of size 23 × 10 cms. and stamped worth Rs 1.30 accompanied by a Bank Draft of Rs. 15 in favour of the Finance Officer, Meerut University. Meerut or by Cash Payment of Rs. 15 at the Cash Counter of the University.

I.P.Os. or M.Os are not acceptable. While requesting for application form please mention 'Application for Teaching Post" on the envelope.

Chander Bhan
REGISTRAR

SHIVAJI UNIVERSITY

KOLHAPUR

Corrigendum to Advertisement No. 21

Dated : 2-6-1986

The specialisation of the post of Professor in the University Department of Mathematics be read as "Mathematics (pure)" and the specialisation viz. Computer Science/Algebra of the Post of Reader in University Department of Mathematics be deleted.

The last date of receipt of application only for the above two posts has been extended upto **22-8-1986.**

S. R. Salokhe
Ag. REGISTRAR

NATIONAL GEOPHYSICAL RESEARCH INSTITUTE

(Council of Scientific and Industrial Research)

HYDERABAD-500 007

Corrigendum to NGRI Advertisement No. 3/86

In partial modification to this Office's Advertisement No. 3/86 published in the advertisement columns of this Newspaper on 16 June, 1986 (Saturday), the essential qualifications notified earlier for the following posts of Scientist 'B' (Rs. 700-1300) may be read as follows:

IV. SCIENTIST 'B' (Rs. 700-40-900-EB-40-1100-50-1300)

(Item No. ii) : (E.Q.) : 1st class M.Sc./Ph.D. in Mathematics or 1st class M.Sc./M. Tech./Ph.D. in Geophysics/Physics, having a strong background of mathematics.

(Item No. iii) : (E.Q.) : 1st class M.Sc./Ph.D. in Mathematics or 1st class M.Sc./M.Tech./Ph.D. in Geophysics/Physics, having a strong background of mathematics.

(Item No. iv) : (E.Q.) : 1st class M.Sc./Ph.D. in Mathematics or 1st class M.Sc./M.Tech/Ph.D. in Geophysics/ Physics, having a strong background of mathematics.

The time schedule for obtaining blank applications and for submitting the filled up applications for the above posts will be as under :

Last date for obtaining blank applications from NGRI.	: 4-8-1986
Last date for submitting filled up applications in NGRI.	. 25-8-1986

The remaining provisions, terms and conditions as published in NGRI Advertisement No. 3/86 will stand unaltered.

C. Shanker
Administrative Officer (SG)

INDIAN INSTITUTE OF SCIENCE

BANGALORE - 560 012.

REQUIRES FOR THE CENTRE FOR COMPUTER AIDED DESIGN

I. PRINCIPAL SCIENTIFIC OFFICER: Advt. No. R(IA)308-25/86

Essential: M.E. in Electrical Engineering/Electronics/Computer Science or equivalent. Six years experience in software design OR Ph.D. in Electrical Engg./Electronics/Computer Science with specialisation in software design in electronics or system software including graphics.

Three years experience in CAD and graphics software design.

Emoluments: Rs. 3,405/- per month in the scale Rs. 1500-2000.

II. SENIOR SCIENTIFIC OFFICERS (2 POSTS): Advt. No. R(IA) 308-26/86

Essential: M.E. in Electrical Engg./Electronics/Computer Science or equivalent. 2 years experience in software design OR Ph.D. in Electrical Engg./Electronics/Computer Science with specialisation in software design in electronics or system software including graphics.

Desirable: Experience in CAD graphics software design.

Emoluments: Rs. 2,965/- per month in the scale Rs. 1100-1600.

III. SCIENTIFIC OFFICERS (2 POSTS) : Advt. No. R(IA)308-27/86

Essential: M.E. Tech in Electrical Engg./Electronics/Computer Science or equivalent with basic knowledge of software design.

Desirable: Experience in CAD and graphics software design.

Emoluments: Rs. 2,123/- per month in the scale Rs. 700-1300. One post of Scientific Officer which was reserved for Scheduled Tribe was advertised in November, 1984. Since no ST candidate has applied, the post has to be dereserved now and applications are invited from general candidates also.

Details and prescribed application forms can be obtained on request accompanied by a crossed Indian Postal Order for Rs. 5/- (free of cost to SC/ST on production of Caste Certificate from a competent authority) drawn in favour of the Registrar, Indian Institute of Science, Bangalore along with a self addressed stamped (Rs. 3.30) envelope of the size 28×18 cms. on or before **18th August, 1986.**

REGISTRAR

REGIONAL RESEARCH LABORATORY, JAMMU

(COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH)

ADVERTISEMENT No. 6/86

Applications are invited on the prescribed form for the following posts in Regional Research Laboratory, Jammu/Srinagar.

PART - I

1. SCIENTIST 'B' : ONE POST.

Rs. 700-40-900-EB-40-1100-50-1300.

Qualification and Experience : First class B.E./B. Tech. in Mechanical Engineering or M. Tech. in Mechanical Engineering **Job requirement :** To participate in the designing of the mechanical process equipment and supervision of Foundry Shop. The person having experience in Foundry practices will be given preference. **Place of posting is at Regional Research Laboratory (Branch), Srinagar (Kashmir).**

The above post is reserved for Scheduled Caste candidate and others need not apply. The persons who have applied earlier in response to our advertisement No. 5/85 need not apply again.

PART - II

1. SCIENTIST 'C' : FIVE POSTS.

Rs. 1100-50-1600.

(i) **Qualification and Experience :** 1st class in M.Sc. Pharmacology/1st class M.V.Sc. Pharmacology/1st class M. Pharm Pharmacology/M.B.B.S. with 6 years research experience on new drug development or M.D./Ph.D. in Pharmacology with 2 years research experience. The candidate should possess substantial evidence of published work on a broad spectrum. Should provide evidence of leadership and ability to guide a team of research workers. **Job requirement :** To plan, execute and guide work on drug development with particular emphasis of modern pharmacological work on drugs and plant origin and to develop interesting leads upto the level of clinical trial.

(ii) **Qualification and Experience :** 1st class M.Sc. in Botany with 6 years research experience/Ph.D in Cytogenetics with 2 years research experience in medicinal and aromatic plants (Cytogenetics/Genetics/Plant Breeding) as evidenced by published work. Should provide evidence of leadership and ability to guide a team of research workers. **Desirable :** Experience in cultivation of medicinal and aromatic plants. **Job requirement :** To guide a group of junior research workers.

(iii) **Qualification and Experience :** 1st class M.Sc. Biochemistry/Microbiology/any of the Biosciences with 6 years research experience/Ph.D. in the same subjects with 2 years research experience in recombinant DNA technology. The Genetic Engineering programme of this Institute at present is mainly in the areas of microbial gene manipulation for hyperproduction of industrially important drugs and chemicals. The candidate is required to have sufficient experience in modern genetic engineering techniques.

(iv) **Qualification and experience :** 1st class B.E. in Biochemical Engineering/Chemical Engineering with 6 years research experience in the area of fermentation technology or M.E. with 4 years experience/Ph.D. in Biochemical Engineering/Chemical engineering with 2 years research experience in fermentation processes. The candidate must have experience of handling microprocessor, controlled. computerised fermentation equipment for data acquisition, analysis and control. Experience in software development for fermentation control will be preferred. The candidate is required to be involved in the process developments in fermentation and scale up studies.

(v) **Qualification and Experience :** 1st class B.E./B. Tech. in Electronics with 6 years research experience or M.E. Electronics with 4 years research experience/Ph.D. in Electronics with 2 years research experience. **Job requirement :** To take care of modern electronic instruments namely Electron Microscope, FT-NMR-GDMS, Computers, Microprocessors equipment etc. Experience in the field of integrated circuitory is essential. Selected candidate will also have to collaborate in development of various technologies where Microprocessors can be used.

2. SENIOR TECHNICAL ASSISTANTS : TWO POSTS

Rs. 550-25-750-EB-30-900.

(i) **Qualification and Experience :** Three years Diploma in Instrument Technology (Mechanical) or Mechanical Engineering or B.Sc. with Physics and Chemistry plus 3-5 years experience is desirable.

(ii) **Qualification and Experience :** B.Sc. Physics and Chemistry or three years Diploma in Electronics or Computers plus 3-5 years experience in computer data processing is desirable.

3. TECHNICIAN : ONE POST.

Rs. 425-15-500-EB-15-560-20-700.

Qualification and Experience : B.Sc. in Science with one year diploma in Laboratory Technician from recognised medical institute with atleast 5 years Hospital experience. Should have detailed knowledge in laboratory tests in Haematology/Bio-chemistry/Microbiology. Preference and higher start can be given to efficient and experienced candidate. The selected candidate will be placed in Group II under the New Recruitment and Assessment Scheme.

4. NURSE : ONE POST.

Rs. 425-15-500-EB-15-560-20-700.

Qualification and experience : B.Sc. Nursing OR 4 years diploma (including 3 years in General Nursing and one year in Mid-wifery). **Job requirement :** To assist the Medical Officer in RRL Dispensary in day to day work. The selected candidate will be placed in Group II under the New Recruitment and Assessment Scheme.

5. PHOTOGRAPHIC ASSISTANT GR. VIII : ONE POST.

Rs. 425-15-500-EB-15-560-20-700.

Qualification and experience: B.Sc. with 2 years experience in photography/3 years Diploma in photography with 2 years experience. Should have experience of processing of colour films, making colour prints handling Video Camera and shooting video films. **Job requirement :** To attend to the photography work and video coverage of the activities of the Institute.

6. SENIOR STENOGRAPHER :
ONE POST.

Rs. 425-15-500-EB-15-560-20-700-EB-25-800.

Qualification and Experience : A Graduate degree with minimum speed in shorthand and typewriting in English of 120 and 40 words per minute respectively. Preference will be given to the candidate having atleast 2 years experience in stenography and office work in Government/Semi-Government/Autonomous Bodies. **Age not exceeding 28 years as on 1st August, 1986 (33 years in the case of Scheduled Caste candidate).**

The above posts are temporary and carry usual allowances admissible under the Central Government rules. Higher initial start may be given to deserving candidates.

Application form can be had (free of cost) from the Administrative Officer, Regional Research Laboratory, Canal Road, Jammu-Tawi **upto 18-8-1986**. Separate application should be submitted for each post. Number of advertisement, name of the post applied for and full address in BLOCK LETTERS must be indicated at the top of the request which should be sent together with self addressed envelopes of 22 cm × 10 cm for obtaining application form.

Completed application on the prescribed form together with non-refundable application fee of Rs. 8/- (no application fee is required from Scheduled Caste/Tribe candidates) in the form of Crossed Indian Postal Order drawn in favour of the Administrative Officer, Regional Research Laboratory, Canal Road, Jammu Tawi, should reach him not **later than 4-9-1986 positively.** The postal stamp should clearly indicate the name of the post office which issued the postal order failing which the application will not be entertained. Services of the incumbents will be transferable anywhere in India.

Application should be supported by attested copies of the certificates/testimonials relating to educational qualifications, date of birth, experience and original community certificate in respect of Scheduled Caste/Tribe candidates from the appropriate authority.

Applications from employees working in Government Departments, Public Sector Organisations and Govt. funded research agencies will be considered only if forwarded through proper channel and with a clear certificate that the applicant will be relieved within one month of receipt of the appointment orders

Incomplete application in any respect will not be considered under any circumstances.

Canvassing in any form and/or bringing any influence political or otherwise will be treated as a disqualification for the post.

Since it is not possible to call all the candidates for interview, the applications will be shortlisted for the purpose and the decision of a duly constituted screening committee of the Institute will be final in this regard.

INTERIM ENQUIRIES WILL NOT BE ATTENDED TO

THE UNIVERSITY OF KASHMIR, SRINAGAR

UNIVERSITY CAMPUS, HAZRATBAL
SRINAGAR-6

Advt. No. F. 10 (App-Gen) Adm/86

Dated : July, 18, 1986

BRIEF ADVERTISEMENT NOTICE

Applications on prescribed form accompanied by a Postal Order/Bank Receipt/Bank Draft for Rs. 5/- drawn in favour of the Registrar cashable at Srinagar to reach the Registrar by **20-8-1986** are invited for the following posts:

1. **Professor in the Pay Scale of Rs. 1500-60-1800-100-2000-125/2-2500 in :**

Departments :

Centre for Energy Studies (Professor/Director/Senior Fellow), Electronics, Education, Computer Science, Geology (For Applied Geology), History, Library Science, Mathematics and Statistics (for Mathematics only);

2. **Director in the Pay Scale of Rs. 1500-60-1800 in State Resource Centre.**

3. **Reader in the Pay Scale of Rs. 1200-50-1300-60-1900 in:**

Department/Centre/Institute

Chemistry, Electronics, Computer Science, Geology (For Applied Geology), Kashmiri, Mathematics (Temporary) and Statistics (one each for both subjects), Political Science, Iqbal Institute, Home Science, Media Education Research Centre (Mass Communication) and Pharmaceutical Sciences.

4. **Lecturer in the Pay Scale of Rs. 700-40-1100-50-1600 in :**

Department, Centre/Institute

Arabic, Electronics, Computer Sciences, Geology (For Applied Geology), Hindi, Law, Iqbal Institute (Purely on temporary basis), Physics, Home Science and Pharmaceutical Sciences.

The prescribed application forms can be had from the University Office on payment of R. 15/- by sending a crossed Postal Order or Bank Receipt/Bank Draft drawn in favour of the Registrar of this University cashable at Srinagar alongwith a self addressed envelope (5″ × 11″) with the necessary postage.

Candidates are advised in their own interest to send their detailed curriculum vitae in advance.

Details in respect of qualifications etc prescribed for the posts can be had from the office of the undersigned.

Any of the qualifications/experience may be relaxed at the discretion of the University. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The initial emoluments in the above pay scales are as under -

Post	Pay	D.A.	A.D.A.	Interim Relief	Total
Professor/Director	Rs. 1500/-	Rs. 243/-	Rs. 1207/-	Rs. 220/-	Rs. 3,170/-
Reader	Rs. 1200/-	Rs. 243/-	Rs. 1207/-	Rs. 190/-	Rs. 2,840/-
Lecturer	Rs. 700/-	Rs. 189/-	Rs. 864.50	Rs. 140/-	Rs. 1,893.30

Arrangements are also being made for subsidized housing accommodation.

Dr. M.Y. Qadri
REGISTRAR

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